CONSERVATION LAW FOUNDATION

October 15, 2008

Philip Guidice, Commissioner
Massachusetts Department of Energy Resources
100 Cambridge Street, Suite 1020
Boston, MA 02114

**Re: Comments – Green Communities Act/APS Implementation**

Dear Commissioner Guidice:

Conservation Law Foundation ("CLF") appreciates this opportunity to respond to the Department of Energy Resources' ("DOER") request for feedback regarding the implementation of the Alternative Energy Portfolio Standard ("APS") established by Section 32 of chapter 169 of Acts of 2008 (the "Green Communities Act"). These comments supplement and expand upon the comments provided by CLF at the September 29, 2008 stakeholder meeting.

The APS has the potential to deliver significant environmental *and* economic benefits by boosting the deployment of clean, cost-effective technologies such as combined-heat-and-power (CHP) systems. CLF respectfully urges DOER to maximize these benefits while ensuring that risky, costly and unproven technologies with questionable environmental attributes, such as coal gasification, are not supported unless and until they meet stringent emissions limits and robust carbon capture and storage performance standards. The APS should be viewed in the larger context of the Commonwealth's energy and climate change mandates as prescribed in the Green Communities Act and Global Warming Solutions Act. Encouraging superior environmental performance, especially with respect to greenhouse gas emissions, should be the guiding principle as the DOER establishes regulations to implement the APS. Every technology and standard should be measured by whether it moves Massachusetts towards a cleaner, more efficient energy future.

<u>How Should the Annual APS Percentage Rate be Determined, and What Should that Rate Be?</u>

DOER should follow the model established under the Renewable Portfolio Standard (RPS) by starting with a modest target such as 0.5% for the first year with an annual escalation of 0.5% until it reaches a 5% total. This proposal sets a reasonable path for meeting the Green Communities Act's overall goal (set forth in Section 116(a)(2)) of providing 20% of Massachusetts consumers' electricity from new renewable and alternative energy by 2020, with

62 Summer Street, Boston, Massachusetts 02110-1016 • Phone: 617-350-0990 • Fax: 617-350-4030 • www.clf.org

**MAINE:** 14 Maine Street, Brunswick, Maine 04011-2026 • 207-729-7733 • Fax: 207-729-7373
**NEW HAMPSHIRE:** 27 North Main Street, Concord, New Hampshire 03301-4930 • 603-225-3060 • Fax: 603-225-3059
**RHODE ISLAND:** 55 Dorrance Street, Providence, Rhode Island 02903 • 401-351-1102 • Fax: 401-351-1130
**VERMONT:** 15 East State Street, Suite 4, Montpelier, Vermont 05602-3010 • 802-223-5992 • Fax: 802-223-0060

new renewables supplying three-quarters of that total (i.e., 15% of load by 2020). As with the RPS, the APS should set one target that encompasses all eligible technologies.

More rapid near-term escalation should only be considered if it can be demonstrated that sufficient cost-effective and environmentally beneficial qualifying technologies are available to meet the targets now.

What Criteria Should be Required for the Specified Technologies or Fuels?

The Green Communities Act establishes certain baseline criteria for the qualification of gasification and paper derived fuel sources and delegates to DOER the responsibility of promulgating more detailed criteria. Under the statute, the specified technologies must meet the following requirements to be considered under the APS:

(1) Gasification technologies must be integrated with capture and *permanent* sequestration of carbon dioxide. The fuel must also be "purchased by, and contractually transported to, the alternative energy generating source in [the] ISO-NE [control area]." Mass. G.L. c. 25A, s. 11F1/2(a)(1). Importantly, gasification technologies must also achieve an overall fuel conversion efficiency of 70% or more. See Section 11F1/2(b).
(2) Paper-derived fuel sources may only qualify after receiving a beneficial use determination (BUD) from DEP, and only to the extent that a facility substitutes fossil fuel with "an equal or greater portion" of the paper-derived fuel. Section 11F1/2(a)(4).

With respect to fuel conversion efficiency standards, it will be necessary for DOER to adjust standards over time to ensure that the APS standards foster and account for improvements in the technologies. For example, although the APS sets an initial fuel conversion efficiency standard of 70% for gasification, Section 116(a)(1) of the Green Communities Act sets an overall goal of 80% annual efficiency by 2020. CLF recommends that DOER design the APS standards to advance the clean energy objectives of the Green Communities Act and Massachusetts Global Warming Solutions Act by establishing emissions performance and other criteria for each of the technologies as follows:

*Combined Heat and Power* (CHP) systems provide the best near-term candidate, among the APS technologies, for achieving the goal of clean, cost-effective electricity. CHP technology already reduces emissions of greenhouse gases and other criteria pollutants and is a proven energy efficiency technology. Notably, recent studies indicate high potential for CHP deployment over the next decade.[1] Given the proven results of CHP and the substantial benefits to be gained from increasing its deployment, baseline standards for all eligible technologies should be calibrated to the standard set by CHP. It makes no sense to direct ratepayer-funded incentives toward technologies with inferior performance. Current data suggest that CHP has a carbon dioxide emissions rate in the range of 550 lbs/MWh and an efficiency rate of 70%. All APS technologies should be required to meet these rates to maximize the benefits of the APS and promote

[1] KEMA, Market Potential of Combined Heat and Power in Massachusetts, prepared for the Massachusetts Technology Collaborative (released for comment March 2008) (estimating an "achievable policy" scenario of 680 MW capacity by 2020) available at http://www.masstech.org/dg/2008-03-MA-CHP-Market-KEMA.pdf.

innovation through competition. In order to foster the proliferation of *new* CHP (as envisioned by Section 116(a)(2)), DOER should limit eligibility to new CHP installations or capacity increases at existing CHP units.

*Flywheel Energy Storage Technology* (FES) criteria should be established to maximize the clean energy benefits of FES. CLF recommends including a requirement that FES only be deemed eligible for the APS to the extent it entails storage and use of electricity from Class I RPS-eligible renewable energy technologies such as wind and solar, whether located on-site or purchased from a renewable generator in a remote location. If DOER extends APS eligibility to FES for storage and use of electricity generated from sources other than clean renewable energy, then the total emissions rate from the generating technology of course must not be permitted to exceed the emissions performance standard established under the APS (i.e., the recommended limit based on the emissions of an average new CHP unit). Allowing FES to store power from dirty sources and then receive APS credit for releasing it clearly would undermine the goal of encouraging clean energy technologies.

*Coal Gasification* technology is not cost-effective, has not been demonstrated to be commercially viable, and is likely to increase greenhouse gas emissions and other pollution. The Green Communities Act requires qualifying facilities to capture and permanently store carbon dioxide, a critically important baseline requirement. Because carbon capture and storage has not been proven feasible anywhere in the United States to date and may never be feasible in New England, no coal gasification can qualify at this time. Electric generation relying on gasified coal should not be determined to be eligible pursuant to the APS until after successful carbon storage and associated reliable monitoring and verification protocols have been established, at a minimum. In addition, as discussed in greater detail below, the net emissions rate for qualifying electric generation facilities relying on coal gas should be at least as stringent as the proposed emissions standards for state-of-the-art coal gasification facilities with carbon capture and storage, as set forth in pending federal legislation introduced by U.S. Senator John Kerry, see S.B. 1227, and in no event should be less stringent than any federal emissions standards for coal gas incentives that are actually adopted.

*Paper-Derived Fuels* pose significant potential risks to the environment and public health; therefore, qualification of such fuels should be carefully reviewed and extremely limited. As discussed at the stakeholder meeting on September 29, 2008, these fuels when combusted may emit carcinogens such as dioxins and arsenic, as acknowledged by a representative from International Paper Products. In addition to coordinating with DEP in establishing appropriate beneficial use determination (BUD) protocols for paper-derived fuels to ensure that toxic fuels do not qualify under the APS, DOER should limit eligibility to paper-derived fuels that (1) do not contain recyclable or re-usable materials; (2) contain only paper unadulterated by coatings, laminates, or other foreign materials; and (3) meet strict emission limits for volatile organic compounds, carcinogens, heavy metals and other potential contaminants. With respect to DOER's question as to qualification of paper-derived fuels, CLF recommends that DOER make a qualify/not qualify determination rather than allowing proportional credit based upon the makeup of the fuel, given the environmental and public health risks posed by combustion of what would otherwise be considered as the non-qualifying portion of the fuel.

What Criteria Should be Applied to Emissions Performance Standards and Permanent CO2 Sequestration Standards?

The Green Communities Act requires DOER to consult with DEP in setting all other criteria and emissions performance standards, which include standards for carbon dioxide emissions, permanent sequestration definitions and standards, and fuel conversion efficiency standards, subject to the mandate that all such standards must be consistent with the Commonwealth's environmental goals including the reduction of greenhouse gases. See section 11F1/2(b). The passage of the Global Warming Solutions Act, with its mandate to reduce greenhouse gas emissions between 10-25% below 1990 levels by 2020 and 80% by 2050, should guide DOER's determination of the appropriate emissions performance standards. Again, CLF recommends that DOER set an absolute emissions limit and minimum efficiency rate for all APS-eligible technologies based on emissions and efficiency rates currently achievable by CHP.

*Emissions Performance Standards for Carbon Dioxide*

CLF recommends setting the maximum emissions rate for all APS-eligible technologies at 550 lbs/MWh. DOER should conduct an analysis of carbon dioxide emissions rates from a variety of CHP configurations to ensure that this is sufficiently stringent. As with fuel conversion efficiencies, DOER should also revisit and adjust the carbon dioxide emissions performance standard to encourage and account for advancements in technology.

Since the Green Communities Act *requires carbon capture and storage specifically for gasification technologies*, the APS emissions limit for gasification technologies should establish an incentive geared toward ensuring maximum achievable carbon capture and storage. In the case of coal gasification with carbon capture and sequestration, CLF thus recommends a standard based on federal legislation recently proposed by U.S. Senator John Kerry that would set the rate for coal gasification with carbon capture and sequestration at 285 lbs/MWh. This standard takes into account the National Energy Technology Laboratory's estimate that 85% capture is currently achievable and that 90% should be achievable as of 2012. Of course, the requirement for permanent carbon-dioxide storage is a hurdle that no facility can currently surmount in the Northeast – but if and when this mandate is actually met, as required by the Act, then it makes sense to require such facilities to capture and store as much of the carbon-dioxide as feasible. It makes no sense to provide an incentive for inferior performance once the initial mandatory hurdle has been surmounted and the ability to capture and store any carbon-dioxide is in place.

DOER also must take into account the newly enacted Massachusetts Global Warming Solutions Act, which calls for reducing greenhouse gas emissions by at least 10-25% below 1990 levels by 2020 and at least 80% by 2050. The ability of the Commonwealth to meet these goals will be affected by the APS emissions limits chosen by DOER. For example, if DOER were to embrace only the absolute ceiling for emissions as set forth in the Act – i.e., the average emissions rate of existing natural gas plants in the commonwealth,[2] this surely would undermine the

[2] Indeed, states such as California and Washington do not even allow a power plant to be built unless it meets a more stringent standard (i.e., new facilities must be at least as clean as a combined cycle natural gas plant). See Cal. Pub.

Commonwealth's ability to meet the Global Warming Solutions Act's mandate because it would allow *incentives* to be directed toward facilities that *increase*, not reduce, emissions from the power generation fleet serving the Commonwealth. Indeed, it would be contrary to the Green Communities Act itself for DOER to simply embrace the Act's statutory ceiling for emissions, since the APS provision requires more than this – namely that the APS standards be "consistent with the commonwealth's environmental goals, including . . . the reduction of greenhouse gas emissions." This provision took on new significance and meaning when the Massachusetts Global Warming Solutions Act was signed into law only weeks after the Green Communities Act became law.

*Standards for Injection and Permanent Sequestration of Carbon Dioxide*

As discussed at the September 29, 2008 stakeholder meeting, CLF recommends that the Department refrain from allowing APS eligibility for coal gasification with carbon capture and permanent sequestration until a regulatory framework for carbon capture and sequestration has been established and the technology has been proven to be safe, effective and verifiable. Estimates for the large-scale, commercial use of carbon sequestration range from 10-30 years at this point, and providing ratepayer subsidies for an unproven technology will diminish the effectiveness of the APS in promoting and advancing truly clean energy.

The legislature took an important and necessary step by limiting the inclusion of gasification technologies to projects that capture and permanently sequester carbon dioxide. Unfortunately, integrated carbon capture and sequestration has not been demonstrated at any power plant in the world. Although the National Energy Technology Laboratory hopes to achieve a demonstration project with 90% capture and sequestration by 2012,[3] the only commercial application of carbon dioxide injection to date has been for enhanced oil recovery, an application that is unconcerned with whether the CO2 actually remains in the ground. Establishing appropriate standards for gasification with carbon capture and sequestration will require coordination with other states and federal agencies to ensure success.

Standards for carbon injection and storage are only now being designed. The Environmental Protection Agency issued its proposal for rules governing the underground injection of carbon dioxide sequestration under the Safe Drinking Water Act on July 25, 2008. The public comment period will not close until November 24, 2008, and the final rule will not emerge for months afterwards.[4] The Interstate Oil and Gas Compact Commission issued a task force report with model rules for carbon capture and sequestration and maintains an updated list of state regulations.[5] Washington became the first state to promulgate regulations for the underground

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Util. Code § 8341; Wash. Rev. Code § 80.80.040(1). Here, where ratepayer-funded *incentives* are being made available, the emissions limits should not be more lax than what is required even to build a power plant elsewhere.

[3] National Energy Technology Laboratory, *Carbon Sequestration Technology Roadmap & Program Plan* (2007).

[4] See Federal Requirements under the Underground Injection Control Program for Carbon Dioxide Geologic Sequestration Wells, 71 Fed. Reg. 43492 (proposed July 25, 2008) (to be codified at 40 CFR pt. 144 and 146).

[5] See Interstate Oil and Gas Compact Commission, CO2 Storage: A Legal and Regulatory Guide for States (December 2007) available at www.iogcc.state.ok.us; see also, Status by state and province of CO2 Storage Legal and Regulatory Development available at http://www.iogcc.state.ok.us/Websites/iogcc/Images/CO2-Update.pdf.

injection of carbon dioxide for the purpose of permanent sequestration in July of this year.[6] The Department should consult with the agencies responsible for implementing such regulations before setting its own standards for oversight and review of proposed carbon-dioxide capture and storage in connection with gasification projects under the APS. As stated above, CLF recommends that no gasification projects be deemed eligible pursuant to the APS until such standards are finalized, given that the Act absolutely requires carbon capture and storage.

Likewise, monitoring and verification protocols will be difficult to establish and enforce – particularly for any fuels that are gasified outside Massachusetts and "contractually transported" here. The regional carbon sequestration partnerships are beginning monitoring and verification projects, but have not yet developed a set of best practices or come to any specific conclusions. Even once such standards have been developed, the Department will have the burden of monitoring storage projects in other states, states that may not have standards the Department considers sufficient. If, as GreatPoint Energy proposed at the stakeholder meeting, third party contractors are used to dispose of the carbon dioxide, the Department's task will be made substantially more difficult.

Until standards for the safe injection of carbon dioxide and effective monitoring and verification of storage have been established and proven, the APS's requirement of "permanent' carbon capture and storage cannot be met. Deferring implementation of the APS with respect to coal gasification to provide sufficient time for the development of appropriate standards is the only reasonable course of action to fulfill the statutory mandate.

*Other Emissions Performance Standards*

DOER should also consult with DEP to ensure that the APS technologies meet appropriate limitations for criteria pollutants, and in the case of paper-derived fuels, that additional testing and limits be established to reduce the risk of toxic emissions. DOER's 2005 "Notice of Inquiry Regarding Low-Emission, Advanced Biomass Power Conversion Technologies" provides a good starting point for examining appropriate emissions standards for pollutants other than carbon dioxide. Table 3 set forth a list of "achievable emission limitations" covering criteria pollutants under the Clean Air Act as well as toxins such as arsenic, antimony, selenium and hydrochloric acid, among others, that may be found in paper-derived fuels.[7] CLF recommends that DOER establish emissions performance standards under the APS that are at least as stringent as the limitations it recommended in 2005. DOER should also conduct a study to determine whether additional toxins should be added to the list.

[6] See Wash. Admin. Code 173-218-115 (2008) available at http://apps.leg.wa.gov/WAC/default.aspx?cite=173-218-115.

[7] Division of Energy Resources, *Notice of Inquiry Regarding Some Proposed Revisions of the Regulations Pertaining to the Definition of "Low Emission, Advanced Biomass Power Conversion Technologies* (July 1, 2005).

What Should the Alternative Compliance Payment Amount be for APS and How Should It Be Calculated?

In order to have the most immediate and effective impact, the ACP should be calculated based upon the financial requirements of qualifying technologies that are market-ready. CHP, for example, is available now and has proven economic and environmental benefits. It makes sense to tailor ACP levels to ensure appropriate incentives for deployment of CHP in order to reap these benefits, and to avoid setting the ACP at the much higher levels that would be needed to support technologies, such as coal gasification with carbon capture and storage, that simply are not ready and still demand significant research and development at the national and global scale.

Conclusion

Thoughtfully implemented, the APS has potential to produce real, verifiable reductions in pollution, advancements in clean energy generation, and even economic benefits. CHP has proven environmental and economic benefits, and therefore should set the standard for all other qualifying alternative generation. Gasification, whether of coal or other feedstocks, presents substantial obstacles in terms of feasibility, effectiveness, safety, and monitoring and verification – particularly with respect to the capture and permanent storage of carbon-dioxide emissions, as required. Therefore, CLF strongly recommends that DOER defer qualification of generating facilities relying on gasification until after federal regulations have been established for injecting and storing carbon dioxide and for monitoring and verifying the effectiveness of sequestration. DOER could then convene stakeholder meetings and accept public comment to determine the appropriate standards for implementing the APS with respect to gasification. Paper-derived fuels also may pose potential dangers to public health that should be mitigated through appropriately tailored fuel content standards and emissions limits.

Thank you, again, for this opportunity to submit comments.

Respectfully submitted,

CONSERVATION LAW FOUNDATION

By its attorney,

/s/ Shanna Cleveland

Shanna Cleveland, Esq.